

WHAT IS CLAIMED IS:

1 1. An ink jet recording apparatus, comprising:

2       a recording head including a nozzle orifice communicated with a

3 pressure generating chamber;

4       a pressure generator, which varies pressure of ink in the pressure

5 generating chamber; and

6       a controller, which drives the pressure generator to eject ink droplets

7 from the nozzle orifice such that a plurality of flushing operations are

8 intermittently repeated with a first time interval, when a recording operation of

9 the recording head is not performed, each flushing operation including a

10 plurality of ink ejections repeated for a predetermined times with a second time

11 interval which is shorter than the first time interval.

1 2. The ink jet recording apparatus as set forth in claim 1, wherein an

2 ejection frequency in a final flushing operation is higher than an ejection

3 frequency in an initial flushing operation.

1 3. The flushing control method as set forth in claim 2, wherein an

2 ejection frequency in a latter flushing operation is higher than an ejection

3 frequency in a former flushing operation

1 4. The flushing control method as set forth in claim 1, wherein the

2 repeated number of ink ejection in a final flushing operation is greater than the

3 repeated number of ink ejection in an initial flushing operation

1       5.     The flushing control method as set forth in claim 4, wherein the  
2     repeated number of ink ejection in a latter flushing operation is greater than the  
3     repeated number of ink ejection in a former flushing operation.

1       6.     The ink jet recording apparatus as set forth in claim 1, wherein the  
2     controller drives the pressure generator to vibrate a meniscus of ink in the  
3     nozzle orifice between the respective flushing operations.

1       7.     The ink jet recording apparatus as set forth in claim 6, wherein the  
2     meniscus of ink is vibrated such an extent that an ink droplet is not ejected  
3     from the nozzle orifice.

1       8.     The ink jet recording apparatus as set forth in claim 6, wherein the  
2     pressure generator is driven at the maximum driving frequency thereof to  
3     vibrate the meniscus of ink.

1       9.     The ink jet recording apparatus as set forth in claim 1, the controller  
2     drives the pressure generator to vibrate a meniscus of ink in the nozzle orifice  
3     before an initial flushing operation is performed.

1       10.    The ink jet recording apparatus as set forth in claim 1, wherein  
2            the recording head performs the recording operation while moving in  
3            a main scanning direction; and  
4            the flushing operations are performed when the recording head is in a

5 stand-by state which is defined as a time period from when the recording head  
6 stops moving to when the recording head starts moving.

1 11. The ink jet recording apparatus as set forth in claim 10, further  
2 comprising a timer, which measures a time period of the stand-by state,  
3 wherein the repeated number of ink ejections in the respective  
4 flushing operation is determined in accordance with the measured stand-by  
5 time period.

1 12. The ink jet recording apparatus as set forth in claim 10, further  
2 comprising a timer, which measures a time period of the stand-by state,  
3 wherein:

4 the controller drives the pressure generator to vibrate a meniscus of  
5 ink in the nozzle orifice; and

6 a vibrating number is determined in accordance with the measured  
7 length of the stand-by time period.

1 13. The ink jet recording apparatus as set forth in claim 1, wherein the  
2 repeated number of ink ejection in the respective flushing operations is  
3 determined in accordance with the type of ejected ink

1 14. The ink jet recording apparatus as set forth in claim 6, wherein a  
2 vibrating number of the pressure generator is determined in accordance with  
3 the type of ejected ink

1       15.     The ink jet recording apparatus as set forth in claim 9, wherein a  
2     vibrating number of the pressure generator is determined in accordance with  
3     the type of ejected ink.

1       16.     The ink jet recording apparatus as set forth in claim 1, wherein the  
2     pressure generator is a piezoelectric vibrator which changes the volume of the  
3     pressure generating chamber to vary the pressure of ink therein.

1       17.     The ink jet recording apparatus as set forth in claim 1, the controller  
2     includes:

3                 a drive signal generator, which generates a common drive signal  
4     including a flushing waveform configured to perform an ink ejection and a  
5     meniscus vibrating waveform configured to vibrate a meniscus of ink in the  
6     nozzle orifice; and

7                 a drive waveform selector, which applies the flushing waveform and  
8     the meniscus vibrating waveform selectively to the pressure generator.

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